



THE UNIVERSITY OF
MELBOURNE

BIOCHEMISTRY AND MOLECULAR BIOLOGY

SCIENCE AT MELBOURNE



“You can think of a chromosome as a shoelace with a telomere as the sheath that prevents the end from fraying.”

Elizabeth Blackburn
Graduate of the Department of Biochemistry and Molecular Biology, University of Melbourne and joint winner of the 2009 Nobel Prize in Physiology or Medicine

Biochemists and molecular biologists study the structure and function of components of living cells, to understand the biological processes that enable all living things to survive and thrive.

The structure of complex biomolecules, particularly proteins, is closely linked to their role in the cell, so solving structures can provide valuable information about normal processes and how they change to cause disease. The understanding of how DNA and proteins interact has led to benefits ranging from more effective treatments for cancer to improved agricultural practices.

By majoring in this subject you will study broad biological processes as well as more specialised topics drawn from structural biology, molecular cell biology, molecular parasitology and cancer. You will learn how to uncover the molecular processes of life and how this knowledge can be applied in medical science and biotechnology.

Enrich lives, including your own, through the study of Biochemistry and Molecular Biology.

Which courses offer Biochemistry and Molecular Biology?

Bachelor of Science

Bachelor of Biomedicine

Breadth in another undergraduate degree

Plan A: Careers you can pursue with this major

You can use your knowledge of Biochemistry and Molecular Biology to pursue employment in diverse fields, including basic and medical research, the pharmaceutical and biotechnology industries, agriculture, teaching, patent law, the environment and food processing industries.

You can also work on the development, production and marketing of biochemical consumables and equipment, or on policy-making in government departments.

Some career choices may require additional qualifications.

Plan B: Graduate/professionally-oriented courses

Options include the Master of Biomedical Science or Master of Biotechnology, the Master of Teaching, leading to becoming

a secondary school science teacher, the Doctor of Veterinary Medicine or the Doctor of Medicine; the right pre-requisite subjects are required to become a doctor. A science degree majoring in Biochemistry opens pathways to a wide range of professions including biomedical sciences, health and business.

Plan C: Research pathways with this major

Options include an honours year or a Master of Biomedical Science with a research project component. Research strengths in the department include: molecular cell biology, functional genomics, bioinformatics, structural biology, protein chemistry, host-pathogen interactions, molecular immunology and signalling.

Sample course plan

BACHELOR OF SCIENCE (Biochemistry and Molecular Biology)

These subjects are only examples and suggestions. Keep in mind that, depending on your interests, your course plan might look different from this one and that you will not need to choose your major until the end of second year.

Year 1	Chemistry 1	Biology of Cells and Organisms	Calculus 1	Breadth or Elective
	Chemistry 2	Genetics and the Evolution of Life	Linear Algebra	Breadth
Year 2	Biochemistry and Molecular Biology	Principles of Microbiology and Immunology	Principles of Genetics	Breadth
	Techniques in Molecular Science	Biochemical Regulation of Cell Function	Genes and Genomes	Breadth
Year 3	Functional Genomics and Bioinformatics	Molecular Aspects of Cell Biology	Genes: Organisation and Function	Breadth or Elective
	Advanced Techniques in Molecular Science	Protein Structure and Function	Biomedical Science Research Project	Breadth

 Subjects leading to the major	 Other science subjects to complement the major
 Major subjects	 Breadth

The 1st year Chemistry subjects required depend on your VCE Chemistry and Mathematics results. High-achieving students need only a single 1st year Chemistry subject 'Advanced Chemistry for Bioscience', while students without VCE Chemistry will need to complete 'Fundamentals of Chemistry before enrolling in 'Chemistry 1' and 'Chemistry 2'. Consult the 2016 Handbook for more information.

Major: All Bachelor of Science students must complete one major. A major comprises 50 points (four subjects) that build on first and second-year study.

Breadth component: All Bachelor of Science students must take subjects from outside the sciences, technology and engineering systems areas of study. This is referred to as 'breadth' and more information can be found at breadth.unimelb.edu.au

Your breadth subject choices should total at least 50 points (four subjects) of your undergraduate degree. An additional component of 25 points (two subjects) is free to be taken as either core science, breadth, or a combination of the two. You may take no more than 37.5 points (three subjects) of breadth at first-year level.

For a complete overview of subjects available in the Sciences, visit the Course and Subject Handbook: handbook.unimelb.edu.au, the Bachelor of Science website: bsc.unimelb.edu.au, or the Bachelor of Biomedicine website: bbiomed.unimelb.edu.au

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